

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-50. (canceled)

51. (currently amended) A method of generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the method comprising:

a) monitoring changes in the state of at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being an internet socket defined by ~~at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address~~ an IP address and a transport protocol part number, and wherein use of the at least one logical connection provides said content to said user;

b) creating data ~~when~~ whenever the use of the permanently activated communications network link causes at least one of said monitored logical connections being the internet socket defined by the IP address and the transport protocol port number to change its state by being generated or terminated;

c) recording said data created in response to the ~~at least one event~~ changes detected by the monitoring; and

- d) generating charging data on the basis of the recorded data.

52. (previously presented) The method as in claim 51, wherein the permanently activated communications network link is an xDSL digital subscriber line.

53. (previously presented) The method as in claim 52, wherein the permanently activated communications network link is an asymmetric digital subscriber line.

54. (currently amended) A method of generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the method comprising:

a) monitoring changes in the state of at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address, and wherein use of the at least one logical connection provides said content to said user;

b) creating data when the use of the permanently activated communications network link causes at least one of said monitored logical connections to change its state by being generated or terminated;

c) recording said data created in response to at least one event detected by the monitoring; and

d) generating charging data on the basis of the recorded data;

~~The method as in claim 51,~~ wherein the use of said logical connection comprises the use of a plurality of socket connections, and wherein in said step of recording data a record of ~~the~~ a number of all socket connections established and terminated is determined.

55. (currently amended) The method as in claim 54, wherein said plurality of socket connections are at least partially contemporaneous and relate to ~~the~~ a same client/server relationship.

56. (previously presented) The method as in claim 51, wherein the information is passed via a computer system arranged to provide the user with access to the computer system arranged to provide content to the user, and wherein the computer system arranged to provide access to the user acts as a proxy client and a proxy server.

57. (previously presented) The method as in claim 56, wherein the charging data are generated by the computer system arranged to provide the user with access.

58. (previously presented) The method as in claim 56, wherein a monitored logical connection comprises at least one socket connection created between the computer system arranged to provide access to the user acting as proxy server and the computer system operated by the user acting as a client.

59. (currently amended) A method of generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the method comprising:

a) monitoring changes in the state of at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address, and wherein use of the at least one logical connection provides said content to said user;

b) creating data when the use of the permanently activated communications network link causes at least one of said monitored logical connections to change its state by being generated or terminated;

c) recording said data created in response to at least one event detected by the monitoring; and

d) generating charging data on the basis of the recorded data;
wherein the information is passed via a computer system arranged to provide the user with access to the computer system arranged to provide content to the user, and wherein the computer system arranged to provide access to the user acts as a proxy client and a proxy server;
and

~~The method as in claim 56, wherein a monitored logical connection comprises at least one socket connection created between the computer system arranged to provide access to the user acting as a proxy client and the computer system arranged to provide content to the user acting as a server.~~

60. (previously presented) The method as in claim 51, wherein a computer system arranged to provide access to the user comprises the computer system arranged to provide content to the user.

61. (previously presented) The method as in claim 60, wherein the charging data are generated by the computer system arranged to provide content to the user.

62. (previously presented) The method as in claim 61, wherein the at least one logical connection comprises a logical connection created between the content provider's computer system acting as a server and the user's computer system acting as a client.

63. (currently amended) The method as in claim 51, wherein the recorded data comprises a record of at least one selected from ~~the~~ a group consisting of the client network layer address, the client transport layer address, the server network layer address and the server transport layer address.

64. (currently amended) The method as in claim 51, wherein the recorded data comprises a record of a period of time relating to the ~~at least one event~~ changes.

65. (currently amended) The method as in claim 51, wherein the ~~at least one event changes comprises the~~ comprise an establishment and/or termination of the at least one logical connection.

66. (previously presented) The method as in claim 51, wherein the recorded data comprises a record of a number of logical connections established and terminated.

67. (currently amended) A method of generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the method comprising:

a) monitoring changes in the state of at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address, and wherein use of the at least one logical connection provides said content to said user;

b) creating data when the use of the permanently activated communications network link causes at least one of said monitored logical connections to change its state by being generated or terminated;

c) recording said data created in response to at least one event detected by the monitoring; and

d) generating charging data on the basis of the recorded data;

~~The method as in claim 51,~~ wherein at least one logical connection is selected from ~~the a~~ group consisting of:

a Transmission Control Protocol socket connection, a User Datagram Protocol socket connection and an Internet Protocol socket connection.

68. (currently amended) A method of generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the method comprising:

a) monitoring changes in the state of at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address, and wherein use of the at least one logical connection provides said content to said user;

b) creating data when the use of the permanently activated communications network link causes at least one of said monitored logical connections to change its state by being generated or terminated;

c) recording said data created in response to at least one event detected by the monitoring; and

d) generating charging data on the basis of the recorded data;

~~The method as in claim 51,~~ wherein the recorded data comprises a record of information extracted from at least one header associated with information passing between the computer system arranged to provide content to the user and the computer system operated by the user during ~~the~~ a subsistence of the plurality of logical connections.

69. (currently amended) The method as in claim 63, wherein said at least one header is selected from ~~the~~ a group consisting of:

all Transmission Control Protocol/Internet Protocol network layer headers, all Transmission Control Protocol/Internet Protocol transport layer headers and all Transmission Control Protocol/Internet Protocol application layer headers.

70. (currently amended) An apparatus arranged to generate charging data relating to the use made of connections over a permanently activated communications network link arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the connections involving at least one client/server relationship comprising a plurality of logical connections, the apparatus comprising:

a) computational means for detecting in at least one logical connection of said client/server relationship at least one event causing a change in a state of at least one logical connection being an internet socket defined by ~~at least one client network layer address, a client~~

~~transport layer address, a server network layer address and a server transport layer address~~ an IP address and a transport protocol port number;

- b) storage means for recording data created in response to the at least one event detected; and
- c) means to generate charging data on the basis of the recorded data;
- d) a computer system arranged to provide said user with access to the communications link including: means to monitor changes in the state of the at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, wherein the use of the logical connections provides said content to the user; and
- e) means to create the data ~~when~~ whenever the use of the permanently activated communications network link causes at least one of said monitored logical connections being the internet socket defined by the IP address and the transport protocol port number to change its state by being generated and/or terminated.

71. (previously presented) The apparatus as in claim 70, wherein the permanently activated communications network link is an xDSL digital subscriber line.

72. (previously presented) The apparatus as in claim 71, wherein the permanently activated communications network link is an asymmetric digital subscriber line.

73. (currently amended) The apparatus as in claim 70, wherein said charging data is generated from the recorded data on the basis of ~~the~~an amount of time for which each said at least one logical connection comprising a socket connection is established.

74. (previously presented) The apparatus as in claim 72, wherein the computer system arranged to provide access to the user acts as a proxy server and a proxy client and is arranged to enable information to be passed between the content providing computer system and the computer system operated by the user.

75. (currently amended) The apparatus as in claim 72, wherein at least one logical connection is selected from ~~the~~a group consisting of:

Transmission Control Protocol socket connection, a User Datagram Protocol socket connection and an Internet Protocol (IP) socket connection.

76. (currently amended) An apparatus arranged to generate charging data relating to the use made of connections over a permanently activated communications network link arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the connections involving at least one client/server relationship comprising a plurality of logical connections, the apparatus comprising:

a) computational means for detecting in at least one logical connection of said client/server relationship at least one event causing a change in a state of at least one logical

connection defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address;

b) storage means for recording data created in response to the at least one event detected; and

c) means to generate charging data on the basis of the recorded data;

d) a computer system arranged to provide said user with access to the communications link including: means to monitor changes in the state of the at least one logical connection between the computer system operated by the user and the computer system arranged to provide the user with content, wherein the use of the logical connections provides said content to the user; and

e) means to create the data when the use of the permanently activated communications network link causes at least one of said monitored logical connections to change its state by being generated and/or terminated;

wherein the computer system arranged to provide access to the user acts as a proxy server and a proxy client and is arranged to enable information to be passed between the content providing computer system and the computer system operated by the user; and

~~The apparatus as in claim 74, wherein~~ the recorded data comprises a record of information extracted from at least one header associated with information passing between the computer system arranged to provide content to the user and the computer system operated by the user during ~~the~~ a subsistence of the connections.

77. (currently amended) The apparatus as in claim 76, wherein the at least one header comprises at least one selected from ~~the~~ a group consisting of all Transmission Control

Protocol/Internet Protocol network layer headers, all Transmission Control Protocol/Internet Protocol transport layer headers and all Transmission Control Protocol/Internet Protocol application layer headers.

78. (currently amended) An apparatus for generating charging data relating to the use made of connections over a permanently activated communications network link which connections involve at least one client/server relationship and which are arranged to enable information to be passed between a computer system operated by a user and a computer system arranged to provide the user with content over said permanently activated communications network link, the apparatus comprising:

a) computational means for monitoring changes in the state of at least one logical connection over the permanently activated communications link between the computer system operated by the user and the computer system arranged to provide the user with content, said at least one logical connection being an internet socket defined by at least one client network layer address, a client transport layer address, a server network layer address and a server transport layer address an IP address and a transport protocol port number, and wherein use of the at least one logical connection provides said content to said user;

b) storage means for recording data created in response to each of the at least one event changes in a state of the at least one logical connection being the internet socket defined by the IP address and the transport protocol port number detected by the monitoring; and

c) computational means for generating charging data on the basis of the recorded data.

HOLMES

Application No. 09/868,245

July 26, 2006

79. (previously presented) The apparatus as in claim 78, wherein the permanently activated communications network link is an xDSL digital subscriber line.

80. (previously presented) The apparatus as in claim 79, wherein the permanently activated communications network link is an asymmetric digital subscriber line.

81. (previously presented) The apparatus as in claim 78, comprising a computer system at an access provider acting as a proxy server and a proxy client whereby the information is passed between the computer system arranged to provide content and the computer system operated by the user, the monitoring being performed by the computer system at the access provider.

82. (currently amended) An apparatus for generating charging data relating to information passed between a user's computer system and a content provider's computer system over a permanently activated communications network link using a TCP/IP protocol and involving at least one client/server relationship comprising:

a) computational means for monitoring communications over the permanently activated communications network link in at least one client/server relationship to detect ~~at least one event causing~~ if there is a change in a state of at least one TCP/IP socket connection defined by an IP address and a transport protocol port number, and for generating event data based on that detection;

b) storage means for recording event data created in response to each detection of the change in state ~~the at least one event detected by the monitoring;~~ and

c) computational means for generating charging data on the basis of the recorded event data.

83. (previously presented) The apparatus as in claim 82 comprising a computer system at an access provider acting as a proxy server and a proxy client whereby the information is passed between the content provider's computer system and the user's computer system, the monitoring being performed by the access provider's computer system.

84. (currently amended) A method of generating charging data relating to information passed between a user's computer system and a content provider's computer system over a permanently activated communications network link using a TCP/IP protocol and involving at least one client/server relationship, the method comprising:

a) monitoring communications over the permanently activated communications network link in at least one client/server relationship to detect ~~at least one event~~ causing whenever an event causes a change in a state of at least one TCP/IP socket connection defined by an IP address and a transport protocol port number;

b) recording data created in response to the ~~at least one event~~ detected by the monitoring; and

c) generating charging data on the basis of the recorded data.

85. (canceled)

86. (currently amended) A method of generating charging data relating to information passed between a user's computer system and a content provider's computer system over a permanently activated communications network link involving at least one client/server relationship, the method comprising:

a) measuring at least one duration relating to at least one logical connection defined by at least a client network layer address, a client transport layer address, a server network layer address and a server transport layer address; and

b) generating charging data relating to information passed over the permanently activated communications network link on a basis of the at least one duration;

~~The method as in claim 85,~~ wherein the measuring comprises measuring a plurality of durations each relating to a respective one of a plurality of the logical connections, the logical connections being at least partially contemporaneous and relating to ~~the~~ a same client/server relationship.

87. (previously presented) The method as in claim 85, wherein a server of the client/server relationship incorporates a server program which incorporates routines to perform the monitoring.

88. (currently amended) A method of generating charging data relating to information passed between a user's computer system and a content provider's computer system over a permanently activated communications network link involving at least one client/server relationship, the method comprising:

HOLMES

Application No. 09/868,245

July 26, 2006

- a) monitoring communications in at least one client/server relationship to detect at least one event causing a change in a state of at least one logical connection being defined by at least a client network layer address, a client transport layer address, a server network layer address and a server transport layer address an IP address and a transport protocol port number;
- b) recording data created in response to ~~the at least one~~ each event causing the change in state of the at least one logical connection being the internet socket defined by the IP address and the transport protocol port number detected by the monitoring; and
- c) generating charging data relating to information passed over the permanently activated communications network link on the basis of the recorded data, wherein said monitoring is performed by a computer system forming an end point of the at least one logical connection.